

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



(43) International Publication Date  
19 May 2005 (19.05.2005)

PCT

(10) International Publication Number  
**WO 2005/045488 A1**

(51) International Patent Classification<sup>7</sup>: G02B 6/00,  
27/22, H04N 13/00, G02F 1/13357

G02B 6/00,

(74) Agents: WHITE, Andrew, G. et al.; c/o Philips Intellectual Property & Stan, Cross Oak Lane, Redhill Surrey RH1 5HA (GB).

(21) International Application Number:

PCT/IB2004/052287

(22) International Filing Date:

3 November 2004 (03.11.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

0326005.6 7 November 2003 (07.11.2003) GB

(71) Applicant (for all designated States except US): KONINKLIJKE PHILIPS ELECTRONICS N.V. [NL/NL]; Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

(72) Inventors; and

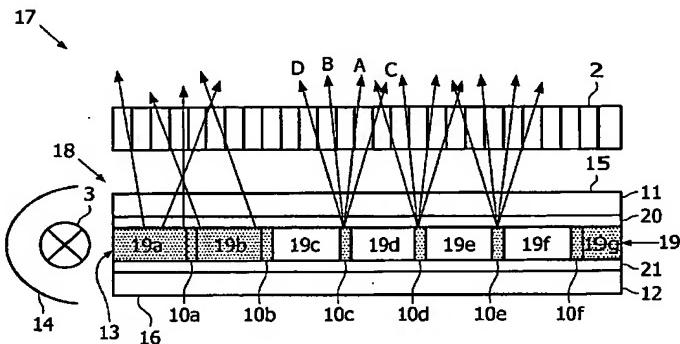
(75) Inventors/Applicants (for US only): IJZERMAN, Willem, L. [NL/NL]; c/o Philips Intellectual Property, & Standards, Cross Oak Lane, Redhill Surrey RH1 5HA (GB). JAK, Martin, J., J. [NL/NL]; c/o Philips Intellectual Property, & Standards, Cross Oak Lane, Redhill Surrey RH1 5HA (GB).

(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: WAVEGUIDE FOR AUTOSTEREOSCOPIC DISPLAY



(57) Abstract: A display 17 comprises a display panel 2 and a backlighting system comprising a light source 3 and waveguide 18. The waveguide 18 comprises a plurality of portions of diffusing material 10a to 10f. Light propagates through the waveguide 18 by means of total internal reflection, but may be scattered by a portion 10a to 10f. Scattered light leaving the waveguide 18 through its exit face 15 produces a pattern of light lines for use in illuminating a 3D autostereoscopic image displayed by the display panel 2. Intervening portions 19a to 19f may be provided, formed from a material such as a liquid crystal gel that can be switched between a light transmissive state and a diffusive state. Optical properties of the intervening portions 19a to 19f may be controlled using electric fields. Such a display 17 can be switched between a 2D image mode, in which the intervening portions 19a to 19f are diffusive and the waveguide 18 provides uniform illumination, and a 3D image mode, in which the intervening portions 19a to 19f are transmissive and the waveguide 18 provides illumination in the form of light lines. If the intervening portions 19a to 19f are controlled using passive or active matrix addressing, the waveguide 18 may provide uniform illumination 26 for a first area of the display panel 2 and light lines 27 for a second area of the display panel 2, allowing 2D and 3D images to be displayed simultaneously. The display 38 may further comprise means 40, 41, 42 for detecting the position of a viewer 6 and adjusting the image displayed and the position and/or pitch of light lines accordingly, in order to provide a 3D image that can be seen from the detected viewer position.

WO 2005/045488 A1

**Declaration under Rule 4.17:**

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ,*

*BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)*

**Published:**

- *with international search report*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*